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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,704	11/29/2001	Jong Won Seok	P67356US0	2611

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EXAMINER

HENNING, MATTHEW T

ART UNIT PAPER NUMBER

2131

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/995,704	Applicant(s) SEOK ET AL.	
	Examiner Matthew T Henning	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/29/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

ch

This action is in response to the communication filed on 11/29/2001.

DETAILED ACTION

1. Claims 1-14 have been examined.

Title

2. The title of the invention is acceptable.

Priority

3. The application has been filed under Title 35 U.S.C §119, claiming priority to Korean Application Number 2000-77645, filed 12/18/2000.
4. The effective filing date for the subject matter defined in the pending claims in this application is 12/18/2000.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 11/29/2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Drawings

6. The drawings are objected to under 37 CFR 1.83(a) because they fail to show in figure 2 the output of element 103 as input to element 104 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number

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of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The disclosure is objected to because of the following informalities:

Page 1 Line 7: “detecting an watermark” is not grammatically correct.

Page 1 Line 17: “network such as internet” is not grammatically correct and “internet” should be capitalized.

Page 12 Line 25: “potable” should read “portable”.

The specification appears to be a direct translation from a foreign language and contains many grammatical errors. The examiner encourages the applicants to carefully review the specification for these errors and correct them appropriately.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 9-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claims 9 and 14 recite the limitation "the copyright information" in lines 15 and 12 respectively. There is insufficient antecedent basis for this limitation in the claims.

11. Claims 10-13 are rejected by virtue of their dependency to claim 9.

12. Claims 11-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claim 11 recites the limitation "generates the residual signal in which the residual signal of the original audio signal and the residual signal of the delayed original signal." This limitation is incomplete because the sentence is improperly terminated. Therefore the ordinary person skilled in the art would be unable to determine the scope of the claim. As such, claim 11 is rejected for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

14. Claim 12 is rejected by virtue of its dependency to claim 11.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US Patent Number 5,822,360) hereinafter referred to as Lee.

17. Regarding claim 1, Lee disclosed an apparatus for embedding a watermark into an original audio signal, comprising: a linear prediction analysis means for generating a prediction coefficient of the original audio signal by means of a linear prediction analysis after the original audio has been inputted thereto (See Lee Col 10 Lines 19-25); a residual signal output means for outputting a residual signal of a delayed original audio signal by filtering the delayed original audio signal using the prediction coefficient generated from the linear prediction analysis means (See Lee Col. 10 Lines 10-18); an echo signal generation means for generating an echo signal of the original audio signal by synthesizing the prediction coefficient of the original audio signal and the residual signal of the delayed required audio signal (See Lee Col. 10 Lines 26-53); and a copyright information insertion means for generating a watermarked audio signal by combining the original audio signal and the echo signal of the original audio signal having copyright information therein (See Lee Col. 2 Lines 22-39, and Col. 10 Lines 62-65).

18. Regarding claim 2, Lee disclosed that the linear prediction analysis means generates the prediction coefficient, which is able to predict an inherent spectrum of the audio by virtue of the linear prediction analysis (See Lee Col. 10 Lines 19-25).

19. Regarding claim 5, Lee disclosed that the echo signal generation means is a linear prediction synthesis filter for outputting the echo signal of the original audio signal by synthesizing the prediction coefficient of the original audio signal outputted from the linear prediction analysis means and the residual signal of the delayed original audio signal outputted from the residual signal output means (See Lee Col. 10 Lines 10-39).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 3-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 1 above, and further in view of Hannigan et al. (US Patent Number 6,674,876) hereinafter referred to as Hannigan.

22. Regarding claims 3 and 4, Lee disclosed a linear prediction analysis filter for outputting the residual signal by eliminating the inherent spectrum of the delayed original audio signal after filtering the delayed original audio signal using the prediction coefficient (See Lee Col. 10 Lines 10-39), but failed to disclose a means for delaying the original signal for a predetermined time, and the time being the key to detecting the watermark.

Hannigan teaches that in an audio watermarking system, the original signal can be delayed by predetermined amounts and then added to the original signal in order to embed the watermark, and that the delay times are the key to the watermark (See Hannigan Col. 8 Lines 17-32).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Hannigan in the watermarking system of Lee by delaying the original signal by predetermined amounts in order to embed a watermark in the signal. This

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would have been obvious because the ordinary person skilled in the art would have been motivated to provide additional messages in the watermarked audio.

23. Regarding claims 6-8, Lee disclosed an error correction encoder for granting an error correction function to the copyright information embedded into the original audio signal (See Lee Col. 9 Line 65 – Col. 10 Line 2); and a summer for outputting a watermarked audio signal by adding a signal outputted from the watermark generator the original audio signal (See Lee Col. 10 Lines 62-65). However, Lee failed to disclose generating the sign of the watermark data based on the message data.

Hannigan teaches that in a watermarking system, the watermark data can be added or subtracted from the original signal depending on the data to be embedded and that a binary 1 would be added and a binary 0 would be subtracted (See Hannigan Col. 8 Line 60 – Col. 9 Line 14 and Col. 11 Lines 6-15).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Hannigan in the watermarking system of Lee by producing sign information for the watermark based on the data to be embedded, and thus adding when a 1 was to be encoded and subtracting when a 0 was to be encoded. This would have been obvious because the ordinary person skilled in the art would have been motivated to enhance the delectability of the watermark and to reduce the perceptibility of the watermark.

24. Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannigan, and further in view of Hayashi et al. (US Patent Number 6,434,253) hereinafter referred to as Hayashi.

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25. Regarding claim 1, Hannigan disclosed an apparatus for detecting a watermark from a watermarked audio signal using an echo signal of a delayed original audio that is delayed for a predetermined delay time (T), the apparatus comprising: a linear prediction analysis means for generating a prediction coefficient by means of the linear prediction analysis of the watermarked audio signal (See Hannigan Col. 12 Line 61 – Col. 13 Line 15); a linear prediction analysis filter for outputting a residual signal by eliminating an inherent spectrum of the original audio signal after filtering the watermarked audio signal using the prediction coefficient (See Hannigan Col. 12 Line 61 – Col. 13 Line 15); a short-time autocorrelation means for calculating an autocorrelation using the residual signal outputted from the linear prediction analysis filter (See Hannigan Col. 8 Lines 33-36); and a sign detection means for detecting the watermark information after detecting a sign of the value outputted from the short-time autocorrelation means (See Hannigan Col. 13 Lines 5-9). However, Hannigan did not disclose the watermark information including copyright information.

Hayashi teaches that audio watermarks can contain copyright information (See Hayashi Col. 1 Lines 32-35).

It would have been obvious to the ordinary person skilled in the art to employ the teachings of Hayashi in the audio watermarking system of Hannigan by placing copyright information in the audio watermark. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the copyrights of the audio data.

26. Regarding claim 10, the combination of Hannigan and Hayashi disclosed an error correction decoder for outputting the error-corrected copyright information through an error-

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correction decoding step after the resultant output sign detected from the sign detector 204 is inputted thereinto (See Hannigan Col. 13 Lines 21-23).

27. Regarding claim 11, the combination of Hannigan and Hayashi disclosed that the linear prediction analysis means generates the residual signal in which the residual signal of the original audio signal and the residual signal of the delayed original signal (See Hannigan Col. 12 Line 61 – Col. 13 Line 15).

28. Regarding claim 12, the combination of Hannigan and Hayashi disclosed that the short-time autocorrelation means finds out the residual signal of the original audio signal and the residual signal of the delayed original audio signal by calculating the autocorrelation of the residual signal (See Hannigan Col. 8 Lines 33-37).

29. Regarding claim 13, the combination of Hannigan and Hayashi disclosed that the sign detection means investigates a correlation sign of the residual signal of the original audio signal and the residual signal of the delayed original signal, thereby outputting an output value, i.e., 0 or 1, according the correlation sign (See Hannigan Col. 13 Lines 1-9).

30. Regarding claim 14, see the rejection of claim 9 above.

Conclusion

31. Claims 1-14 have been rejected.

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

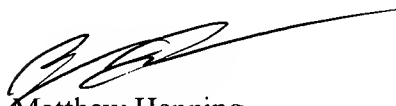
- a. Bender et al. (US Patent Number 5,893,067) disclosed a system for hiding data in audio signals using echoes.

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- b. Linnartz (US Patent Number 5,933,798 disclosed a system for watermarking a signal using predictive filters.
 - c. Matsui et al. (US Patent Number 6,539,356) disclosed a system for embedding data in a signal using backward adaptive prediction.
 - d. Boney et al. (*Digital Watermarks for Audio Signals*) disclosed general information regarding audio watermarking.
33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew T Henning whose telephone number is (571) 272-3790. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Matthew Henning
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3/16/2005


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